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COMPLETE SPECIFICATION

Flat Sachet which, upon being filled becomes Deformed Volumetrically so as to give at least One Flat Facing, and method for producing this Sachet

We, SOCIÉTÉ ANONYME SCIPER, 20, Boulevard de la Princesse Charlotte, Monte Carlo, Monaco, a Body Corporate organised under the laws of Monaco, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to flat sachets, that is to say, sachets produced from two superposed sheets or foils by joining the two thicknesses along a line. These sachets are notably those made of flexible foil, especially thermoplastic film, or paper, cloth or similar material, but the invention applies equally to sachets made of more rigid material complete with score-lines for folding along. The term "welding" is intended herein to refer to lines of either welding or gluing of two superposed films or foils, or in certain instances where the raw material is a lay-flat tube or a sheet folded once, such a line of welding or gluing may conveniently be replaced by a fold of the sheet material.

Upon being filled, flat-lying sachets of this type become deformed, giving a cushion-like shape, the two facings limited by the welds bulging outwards. Because of this, they do not present anywhere a flat surface capable of constituting a firm base. Such a flat surface constituting a firm base is however of particular interest for enabling the sachet to be stood upright after it has been opened or part-emptied.

The outline formed, for the sachet, by the short lateral welds may be either concave or convex. In the case of a concave outline there is formed automatically, under the action of internal pressure during filling for example, a fold which, under the simple hydrostatic pressure of the liquid, opens out flat, giving the swelling desired. In the case of a convex outline, it is necessary, before, during and after filling, to push in the protuberances corresponding to the apexes of the obtuse angles, but the fold eventually formed is then stable.

According to the present invention, a flat sachet produced from two superposed sheets of deformable material of the same outline joined along their side edges, e.g. by a welding or gluing line or by a fold in the material itself, and which upon being filled deforms volumetrically giving at least one flat facing, is characterised in that between adjacent ends of the said edges there is formed a bottom-edge welding line, adapted to lie centrally across the eventual flat facing, which is joined to the ends of one or both of said side edges by short lateral walls defining between them an obtuse angle.

It is pointed out that the descriptions "bottom" and "side" are relative only, and that the eventual flat facing could be formed on one or more side walls or on the top of the sachet.

Other characteristics of the invention will emerge from the description which now follows relating to numerous examples of execution, in which reference will be made to the accompanying drawings, in which:—

Fig. 1 is an elevation view of a flat sachet which becomes deformed volumetrically in order to give a fairly hexagonal, flat base;

Fig. 2 is an elevation view of the sachet as per Figure 1, in a filled condition;

Fig 3. is an elevation view of the sachet as per Figure 1, standing upright;

Fig. 4 is an elevation view of a flat sachet which deforms volumetrically to assume the shape of a pyramid with a flat base of diamond shape;

Fig. 5 is an elevation view of the sachet as per Figure 4, in a filled condition;

Fig. 6 is an elevation view of the sachet as per Figure 4, standing upright;

Fig. 7 is a perspective view of a sachet of prismatic shape with square base;

Fig. 8 is a plan view of the bottom portion of the sachet as per Figure 7, laid out flat, showing details of how it is traced out;

Fig. 9 is a view corresponding to that of Figure 7, for a prismatic sachet with a base of regular hexagonal shape;

Fig. 10 is a view corresponding to that of Figure 8 for the sachet illustrated in Figure 9;

Fig. 11 is a view corresponding to that of Figure 7 in the case of a prismatic sachet with a base of irregular quadrangular shape;

Fig. 12 is a view corresponding to that of Figure 8 for the production of a sachet as in Figure 11 with a variant form of execution shown in broken lines;

Fig. 13 is a perspective view of a pyramidal sachet with a square base;

Fig. 14 is an outline view, on the flat, of a shape designed to produce the sachet shown in Figure 13;

Fig. 15 is a plan view of a pyramidal sachet with a base of irregular hexagonal shape, and, on the left, projecting concertina lugs;

Figure 16 is a flat outline view of the sachet as per Figure 15;

Fig. 17 is a flat view of a sachet on an irregular hexagonal base similar to that shown in Figure 16, with its carton sheathing;

Fig. 18 is a perspective view of the sachet as per Figure 17, in a filled condition;

Fig. 19 is a perspective view of a prismatic sachet with a base of regular hexagonal shape similar to that shown in Figure 9, but produced from a convex outline;

Fig. 20 is a view of the bottom part of the sachet as per Figure 19, laid out flat, and showing details of how it is traced out;

Fig. 21 is a view from underneath the base of the sachet as per Figure 19;

Fig. 22 is a plan view of the marking out and welding on two superposed foils for producing flat sachets which become deformed when filled, resulting in pyramidal sachets on a hexagonal base;

Fig. 23 is a plan view of the semi-rigid strengthening pieces for the sachets produced in accordance with Figure 22;

Fig. 24 is a perspective view of the sachet corresponding to Figures 22 and 23 after assembly and filling;

Fig. 25, is a view, on the flat, of another type of sachet forming a hexagonal bottle, and

Fig. 26 is a perspective view of the sachet as per Figure 25 after filling;

Fig. 27 is a view on the flat of a pyramidal sachet with carton strengthening piece ensuring that the apex is gripped tight;

Fig. 28 is a view of the same sachet in a filled condition, the top being cut off;

Fig. 29 is a view on the flat of a bottom-filled sachet and its stopper cap;

Fig. 30 is a perspective view from underneath the filled sachet;

Fig. 31 is a view of a sachet laid out flat giving a sachet of cubic shape;

Fig. 32 is a perspective view of the sachet as per Figure 31, in a filled condition.

The sachet 1 of Figures 1 to 3 has, laid out flat, an upper portion of any shape, which might be rectangular or otherwise, but which has been shown as being trapezoidal and with a neck 2. This sachet is produced for example, by two sheets of polyethylene or similar substance, joined at their side edges by welds 3.

Conforming to the invention, the base of the sachet is constituted by a weld 4 perpendicular to the axis which is joined to the welds of the side edges by two short lateral welds 5 forming an obtuse angle of apex C.

Upon being filled, the sachet assumes (Fig. 2) a swollen shape resulting from movement apart of the central portions of the sheets perpendicularly to their initial plane, with a coming closer together of the side edge welds. The result of this is that the apex "C" of the angles of the welds 5 move towards each other.

If (Fig. 3) the sachet is placed on a surface, the base tends to collapse though extending the initial deformation. The fold which starts at point C opens out in width until it flattens out completely the surface located between these points and the edge 4. This surface forms a base which ensures the stability of the sachet.

In the example of construction as shown in Figure 4, the sachet 6 is made up of two flat sheets of trapezoidal shape with a relatively considerable height, welded at 7 on their side edges. The base is formed by a broken-line weld 8 joined at one end to the bottom end of one side edge weld, and joined at the other end to one of a pair of short lateral welds 9 forming a obtuse angle with an apex C. Upon being filled, with the sachet being held at its apex, the sachet distends as shown in Figure 5, the angle C receding towards the inside of the profile, forming a fold perpendicular to the front plane. Upon the sachet's being put down (Fig. 6), the point B^1 is turned over towards A^1 and the bottom collapses to produce a base of diamond shape, the sachet assuming a pyramidal appearance.

The above methods of construction produce sachets which, upon being deformed volumetrically, present a good base but their outline is something of a rule-of-thumb matter. It is however possible to give the filled sachets a base of fairly well defined shape. The technical side of the manner in which they are

produced will be gone into at a later stage.

The method of construction as shown in Figures 7 and 8 is aimed at the production of a flat sachet which changes in shape after filling and upon being stood upright on a surface, into a prismatic sachet with a square base. This base is shown in dotted lines as being bent back on the plane of Figure 7. To produce this sachet, there are applied one on top of the other, two sheets of thermo-weldable material, for example, and the job of welding them together is carried out along two parallel side-edge lines 12 spaced out at an equal distance from the semi-perimeter of the square. These welds terminate on a perpendicular transverse 13 which constitutes the base line.

Starting from the points 14 there are now traced two lines 15 making with base line 13 an angle α equal to 45°, that is to say, equal to the half-angle at the apex of the square. Next, a straight line 16 is drawn parallel to the base line and at a distance from the intermediate apex 17 equal to half the diagonal of the square base eventually formed. Then, two points 18 are plotted, their distance apart being equal to this diagonal, and perpendiculars 19 are raised which again cut the straight lines 15 at 20, the bisector of the obtuse angles thus formed passing through point 17. The outline thus plotted is edged by the short lateral welds 15, 19.

Upon filling taking place, folds are formed at point 20 and they give rise to two lugs 21, with edges of the fold along bisectors 22 which, when the sachet is placed standing upright, fold back exactly underneath the base, creating two concertina folds which are limited towards the inside by the dotted lines 21.

The outline of the base may be modified, the straight line 16 being capable of occupying any position outside points 14 which conforms to the distance to point 17. Thus, it may be given the position 16^1, the points of juncture with the straight lines 15 taking place by way of the perpendicular 19^1.

The method of construction as shown in Figures 9 and 10 is aimed at creating a flat sachet which becomes deformed into the shape of a prism with a regular hexagonal base shown folded back in dotted lines at 23^1 in Figure 9. Here too for example, the point of departure may be taken as being two sheets of thermo-weldable material superposed one on the other and joined together by two parallel side-edge welds 24 spaced out by the half-perimeter of the sachet and terminating on the transverse base line 25. On this line 25 are plotted the two apexes 26. A line 27 is drawn parallel to line 25 and distant from the layer by the height of the semi-trapezium of the base. Starting from points 28, straight lines 29 are drawn, forming an angle at 60° equal to the half α^1 of the angle at the apex of the eventual base hexagon. These straight lines again cut the straight line 27 at point 30 and, geometrically, the distance between the points 20 is equal to the diagonal of the hexagon. The sachet thus produced becomes deformed, giving rise to the sachet as shown in Figure 9, lugs 31 fitting exactly underneath the base. In order to facilitate the formation of the folds in this particular instance where the obtuse angle is equal to 180°, welds 32 present a minimum of width in the middle of sides 29, so as to define in effect a pair of equal short lateral welds, the meeting points of which corresponds to the point of formation of this fold.

If the marking out is done starting from points 30, then it will comprise a straight line 33 joining this point 31^1 at a point 34 such that the bisector of the angle 30^1, 34, 28 passes through the adjacent apex 26. In this case, the lugs of the concertina folds formed will project from the base of the prism.

It is equally possible to make sachets having an irregular base such as the prismatic sachet of Figures 11 and 12 whose base 35 is a four-sided polygon symmetrical in relation to the straight line 36 joining the two opposite apexes 37. It is also possible to produce on the superposed sheets, two parallel side-edge welds 38 spaced out by the semi-perimeter of the base and between which base line 36 is marked out. On this base line the intermediate apex is taken back and a line 41 is traced, parallel for instance to line 39 and distant from the apex 40 by the height of a triangle forming a semi-base 35. As from the points 37—37^1 straight lines 42—42^1 are drawn, forming respectively with straight line 39 angles β and β^1 equal to the angles at the base of the triangles of base 35.

Two points 43 and 43^1 are plotted on straight line 41, the outline 40, 43, 43^1 reproducing a triangle of the semi-base 35, the bisector of angles 37, 40, 43 and 37^1 again cutting the straight lines 42, 42^1 at points 44, 44^1, and the outline is terminated by straight lines 45, 45^1 joining these points to points 43, 43^1. The short lateral welds are then constituted by the pairs 42, 45 and 42^1, 45^1. This outline may be made the subject of many modifications by turning the triangle 40, 43, 43^1 about point 40. At the limit, one of points 43 or 43^1 respectively may be merged with one of points 37 or 37^1 respectively, forming outline 46 which in this case will give rise to one single concertina fold. With these outlines, the lugs of the box folds of the base fit exactly underneath the base but points 43 and 43^1 might be given a greater or a lesser space interval which would then result in the formation of box folds with the lugs retracted or projecting respectively from the base.

In Figures 13 and 14, the same principle is applied as in Figure 7 for marking out a flat

sachet which will give rise, upon being filled, to a pyramidal sachet on a square base 47. The two lateral side-edge welds 48 form between them an angle equal to twice the angle at the apex of one facing. Base line 49 is a broken line with an apex at point 50. As from points 51 two lines 52 are drawn forming with the straight lines 49 an angle α equal to 45°. The straight base line 53 is at a distance from point 50 equal to a half-diagonal of the base and, on the base two points 54 are plotted, distant by the length of the diagonal. The diagonal from each angle 51, 50, 54 cuts straight line 52 again at point 55 and the straight line 54, 55 finishes off the outline. In this case, the short lateral welds are constituted, at each side by line 42 plus the line joining points 54, 55.

Figures 15 and 16 correspond to a method of construction similar to that of the preceding figures and particularly to that of Figures 13 and 14, but with a base the shape of an irregular hexagon. Side-edge welds 56 are again featured and the base line 57 is a broken line with apexes 58. Starting from apexes 59, lines 60 are drawn, forming with the base line an angle α equal to the half-angle at the corresponding apex of the base. In a similar manner, a line 61 is drawn distant from straight lines 58 by the height of the base semi-trapezium. On this base any two points are taken situated outside the point of intersection of straight lines 60 and 61. In the drawing these points have been taken unequally distant from the centre, point 62 being at a distance from the line of symmetry equal to half the diagonal joining the apexes on the base which is being produced, whereas point 63 is further away from it. Point 62 is joined to a point 64 on straight line 60, point 64 being such that the straight line 65 which joins them describes with straight line 60 an angle whose bisector passes through point 58. The same procedure is followed in the case of point 63 to plot point 66 and straight line 67. In this case, the pairs of short lateral welds are represented respectively by lines 60, 67 at one side and lines 60, 65 at the other side.

Upon being filled, the box fold corresponding to points 63, 66, projects from the base of the sachet as shown at 68 in Figure 15.

Figures 17 and 18 represent the manner of production of a sachet made of plastic film entirely identical with that shown in the right hand portion of Figure 16, except that this sachet is sheathed on its lateral external facings between welds 56 by a film at sector 69. In this way a sheathing is made in which there may be introduced one of the legs of a cut-out carton 70 with folding scarf 71 reproducing at least a part of the development of the pyramid's lateral facings. The two legs are joined by an element folded into a V shape 72 forming a hexagon inscribed in the hexagon of the base being produced. This element 72 has a semi-circular shaped cut-out 73. Legs 59 may have lateral cut-outs 74 which facilitate the hold of the sachet when it has been formed.

On being filled, the sachet becomes distended as shown in Figure 18. By turning back the tongue formed by cut-out 73, the base 72 is locked in the open position and, consequently, the sachet too is likewise locked.

In the above methods of construction the short lateral welds joining the base to the side-edge welds form an angle giving a concave shape, this kind of outline giving the automatic formation of the fold. The result aimed at is perfectly achieved but in certain cases, by reason of the foil material's own elasticity and above all, by reason of the rigidity of the welds, glued seams or other ways of effecting a joint between the superposed foils constituting the flat sachet, the folds only form and only support hemselves by means of a certain pressure exerted by the sachet on the bearing surface. That is to say that the folds are only formed, and the sachet is only stable on its base, if the sachet is sufficiently filled. Moreover, the base tends to regain its original flat shape as soon as it is raised.

These drawbacks are negligible in many cases but it has been discovered that it is in fact possible to produce sachets in the flat which easily become deformed so as to give, by the creation of folds, sachets of a flat base, the folds being locked in position.

This result is achieved by producing the junction line between the side-edge welds of the sachet and the base of the flat sachet by two short lateral welds forming between them a convex angle.

With such sachets it is necessary to press in the convex parts after filling, so as to obtain the formation of the fold but the folds thus produced confer a greater stability on the sachet, the flat base no longer losing its shape even when the sachet is almost empty.

To produce a sachet with a base of definite shape, the tracing out is done according to the method described above, the points chosen on the said straight line base axis being taken inside the intersections of the said straight line base axis with straight lines forming with the base line an angle equal to the half-angle at the corresponding apex of the base polygon.

An example of such a layout is illustrated in Figures 19 to 21 in respect of a flat sachet (Fig. 20) which loses its shape upon being filled, to give rise to a prismatic sachet on a regular hexagonal base, which base is represented in Figure 21.

This sachet is made starting from two sheets of thermo-weldable material which are superposed and joined by two parallel side-edge welds 81 and spaced apart by half the perimeter of the sachet, and terminating on the

transverse base line 82. On this line 82, two points 83 are plotted which correspond to the apex of the base of the prism, these two points dividing the base line into three equal parts, then a line 84 is drawn parallel to line 83 and at a distance from the latter of the height of the trapezium forming a half-base. Starting from points 85 corresponding to the apex of the base, there are drawn to the lower end of welds 81, straight line 86 forming an angle λ equal to 60°, that is to say, equal to the angle at the base of the isosceles trapezium forming a semi-base. These straight lines 86 again cut straight line 84 at a point 87. Points 88 are selected situated on the line 84 inside point 87. The drawing of the sachet is terminated by joining these points 88 to points 89 on lines 86, the points 89 being fixed geometrically in such a way that the bisector of angle μ formed by straight lines 86, 88, 89 passes through point 83. In this case, the short lateral welds are represented by lines 86, 87 at each side.

When the sachet is filled, the said sachet swells up under the pressure of the liquid and it is sufficient, by exerting at points 89, pressures directed towards the inside of the sachet, to bring back in again the points formed at that place by the filled sachet so that a flattened base tends to be formed. When the inward pressures at points 89 cease, the deformation still goes on, and if the sachet is placed on a flat surface, the base flattens out permanently as shown in Figure 21, a fold being formed inside outline 85, 83, 88, the folding of the fold in question taking place along lines 83—89.

The method of construction described above can be applied to the other shapes of sachet previously described.

Fig. 22 illustrates a method of producing on two superposed sheets of thermoplastic material, flat sachets which automatically lose their shape upon being filled, to produce, by the formation of a fold, a pyramidal sachet with a flat base similar to those described with reference to Figures 15 to 18.

As will be evident from the description which now follows, this sachet has, in comparison with the preceding type, certain technical advantages, and also permits of the manufacture of such sachets without loss of material.

In Figure 22 are represented the production of only two sachets on superposed main strips whose height is equal to the height of the flat sachet, but it is quite obvious that it is possible to produce, over the whole length of the strip, the outline of multiple sachets.

The particularity of the sachets of Fig. 22 is that they are produced head-to-tail in relation to the adjacent sachet, being formed by parallel welds such as 90, between which it is sufficient to make a cut-out 91 in such a manner as to separate the sachets. In the portion of the outline adjacent to the base of one of the sachets and located at right-angles to point 92 where the box fold is formed, the weld of the neighbouring sachet is enlarged as represented at 93. This surface enables the sachet to be gripped more easily, with the aid of a pair of pliers, for example, in order to place it on the filling machines. It is also possible to make in this surface, perforations such as 94 enabling the sachet to be suspended on two pins placed on either side of the filler neck, or to provide the filled sachet with a piece of string forming a handle and so enabling it to be carried.

Moreover, there are superposed on the two abovementioned main strips, and on either side of the latter, two other centre strips 95 made of a thermo-weldable substance compatible with these two main strips, the strips 95 in question being attached externally by welds 90 and cut-out along outline 91. These strips form a partial sheathing for the sachet walls and ensure that semi-rigid strengthening pieces—which will be described in the following notes—are maintained in position.

The strengthening pieces are constituted by two cut-out pieces of carton represented in Figure 23. These two strengthening elements have a principal surface of fairly trapezoidal shape 96 fitting between the welds 90 of strips 95 and extending beyond the latter upwards, this surface being provided with a cut-out 97 giving rise to a tab and a circular shaped perforation 98. This surface 96's lower portion is limited by two straight lines corresponding to the outline of two of the sachet's base edges starting from welds 90, the centre portion being extended by the rectangular tab 99 which, in one instance, has two fairly parallel cut-outs 100 and, in the other instance, two tabs 101 shown in dotted lines and capable of engaging in the said cut-outs 100.

The carton shape thus produced is provided with folding score-lines 102 shown in broken lines, these folding score-lines 102 joining the centre hole to the edge of the blank as shown, in such a way as to pre-shape the facings of the assembled and filled sachet.

The strengtheners above described are slipped between the sachet and strips 95, the tabs 97 being passed over the strip 95 in such a way as to hold the strengtheners in place. Then, the sachet is filled, the base of the said sachet changing its shape and tending to give a flat base of hexagonal shape; then the two tabs 99 are bent back under this base and they are fastened with the aid of the tabs 101 fitted in the cut-outs 100, the sachet assuming the shape shown in Figure 24.

The folding score-lines 102 produce, on this sachet, side edges which give it a pyramidal shape on a diamond-shaped base

with two triangular facets 103 terminating on the centre perforation 98. All that now remains is to close off the sachet's opening by a weld 104.

The sachet has a good rigidity by virtue of the base formed by the tabs 99 and its own geometrical shape; the perforations 98 provide a grip surface for the fingers holding the sachet.

When it is desired to make use of the sachet's contents, all that is necessary is to cut the apex of the angle formed between welds 93 and 104. It is possible to obtain two pouring spouts of different sections.

The sachet of Figures 25 and 26 is of the type with an outline having at the base, box angles 105 and, at the apex, other box angles 106 between the side weld and the portion forming the neck, so as to produce the box folds which form automatically to give a hexagonal base and an upper surface whose general shape is also hexagonal.

The lower portion of the sachet is sheathed on its two facings by a film 107 gripped at its edge in the welds used in the formation of the sachet. Thus, there are produced, on the two facings, two pockets in which it is possible to fit strengtheners such as cartons 108 having folding score-lines 109 following the outline of the side edges of the volumetric shape which the sachet under consideration is intended to assume when it is filled. These strengtheners may have openings such as 110 which, if the thermoplastic films happen to be transparent, make it possible to see the liquid contained in the sachet. In order to ensure that the said strengtheners are held in place, they can include portions of extra width such as 111 which are caught up in narrowing sections in the space between the films 107 and the sachet proper, these narrowing sections being produced for example, by weld-line 112.

The neck of the sachet as per Figure 25 has a special shape as illustrated in the drawing. A transverse strip 113 fitted between the two lateral welds of the base of the neck makes it possible to re-close the filled sachet in a sufficiently fluid-tight manner, by folding back the neck 114 a matter of 180° and fitting this folded-back portion under strip 113.

The sachet of Figures 27 and 28 is similar to that of Figures 22 and 24. It differs from it essentially by virtue of the fact that the thin carton strengthener 96^1 has, as from hole 98^1 and in the direction of its upper rectilinear edge, two folding score-lines 116 terminating in the upper corners of the strengthener. The lower folding score-lines running from hole 98^1 towards the base have been retained. When the sachet, totally or partially filled is placed on its base as shown in Figure 28, the facings produced by the folding score-lines tend to assume a convex shape so as to give rise to the pyramidal shaping of the flat foil with hole 98^1 as the apex, but facings 117 and 118, subjected to a higher hydrostatic pressure and which have a larger, surface area, undergo the maximum deformation, facing 119 staying practically flat. The free edges 115 grip between them the apex of the plastic sachet, practically forming a pincer-like grip giving a degree of fluid-tightness in the open sachet sufficient to prevent evaporation.

The sachet of Figures 29 and 30 is similar to that described above but, in the course of its being manufactured, the weld produces, along base axis weld 120, a filling neck 121. The portion of the strengthener cartons 96^1 corresponding to the base, has a slit 122. The strengthener proper is completed by a cap 123 made preferably of waterproofed carton or similar material, having two opposing T shaped tongues 124.

The sachet is filled in an upside-down position after which the neck 121 is closed by a weld made as closely as possible to the base axis weld. The sachet is then put into shape, the neck being bent back underneath the strengthener's bottom tabs 96^1. The cap 123 is then placed in position, tongues 124 being fitted in slits 122 so as to lock the base in position, as can be seen in Figure 30. The said cap 123 also protects the base when the latter is placed on a damp surface.

The sachet shown in Figures 31 and 32 illustrates a series of sachets in which the flat facings created by the method as per the invention no longer constitute the base but the terminal facings of a prismatic sachet. The concertina-like folds are then located in the vertical facings of the volumetrically deformed sachet.

The upper horizontal outline and the lower horizontal outline are, consequently, of a length corresponding to the edge of the prismatic volumetric shape and are distant from each other by the semi-perimeter of the section and they are joined by two lateral lines corresponding to the formation of a flat facing by box folds, these traced lines being produced as described above, depending on the section which is to be obtained.

The flatwise sachet is constituted in the example in question, by two superposed films of thermoplastic material welded together, and the aim is to produce a sachet which will assume the shape of a cube having a pouring neck on one of its side edges.

The flatwise sachet has a lower weld 131 the length of which is equal to the side edge of the cube, and an upper weld 132 of the same length but making provision for the filler neck 133, the distance between the two welds being equal to twice the length of the side edge.

These two welds are joined by side edge welds the outlines of which are permanently defined, in accordance with the invention. The two portions of welds 134 are at a distance

from straight line 135—135 equal to the half-median of the facing. The welds 136 form, with straight lines 135—135, angles ρ equal to 45° and the welds 137 are marked out in such a way that the bisector of the angle of welds 136—137 passes through point 138. The pairs of lines 136—137 constitute the short lateral welds defining an obtuse angle.

Upon being filled, the sachet distends, to give rise to a cube shape. As a matter of preference the box folds will be cleated in position by a gummed strip 139 encircling the wrapper, neck 133 being closed by a weld 140.

The methods of execution as described in the aforegoing by way of example are capable of being made the subject of many modifications without departing from the scope of the invention as defined in the appendant claims:—

WHAT WE CLAIM IS:—

1. A flat sachet produced from two superposed sheets of deformable material of the same outline joined along their side edges by welding lines and which upon being filled deforms volumetrically giving at least one flat facing, characterised in that between adjacent ends of the said side edges there is formed a bottom-edge welding line, adapted to lie centrally across the eventual flat facing, which is joined to the ends of one or both of said side edges by short lateral welds defining between them an obtuse angle.

2. A flat sachet, as claimed in Claim 1, wherein the short lateral welds defining between them an obtuse angle are constituted by a weld having one edge linear and the other edge angled such that the weld is reduced in thickness intermediate its ends, the two portions of the angled edge defining said obtuse angle.

3. A flat sachet, as claimed in Claim 1, wherein a top-edge welding line is joined to the other ends of the side-edge welds by short lateral welds defining between them an obtuse angle, an open neck being left intermediately of said top-edge welding line.

4. A flat sachet, as claimed in either of Claims 1 and 2, wherein reinforcing sheaths are provided for the sheets except for a portion adjacent to the short lateral welds defining an obtuse angle between them.

5. A flat sachet, as claimed in either of Claims 1 and 2, wherein the short lateral welds defining the obtuse angle form a concavity in the outline of the sachet.

6. A flat sachet, as claimed in either of claims 1 and 2, wherein the short lateral welds defining the obtuse angle form a convexity in the outline of the sachet.

7. Sachets in accordance with any of the constructions particularly described herein with reference to the figures of the accompanying drawings.

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Fig.1

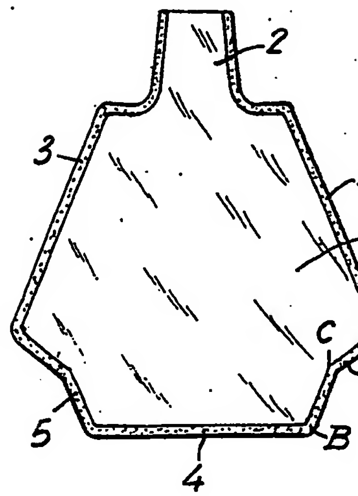


Fig.2

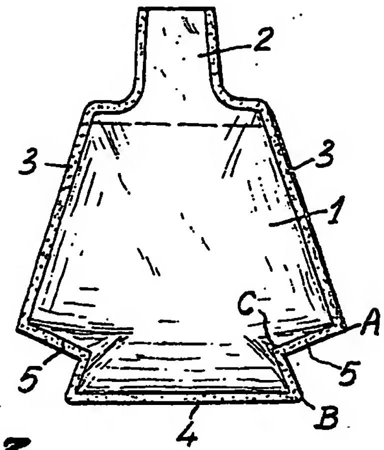


Fig.3

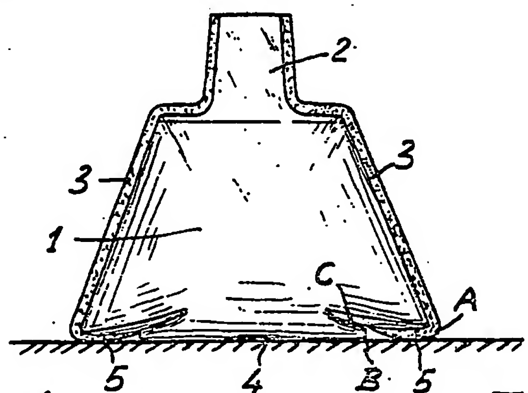


Fig.4

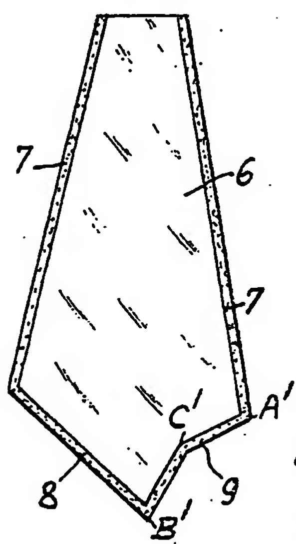


Fig.5

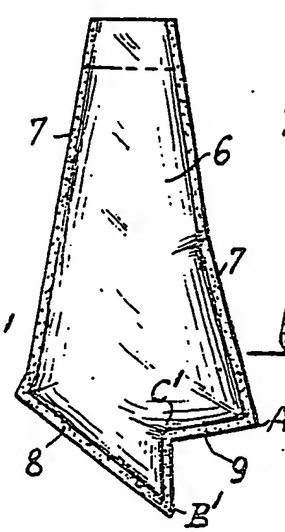
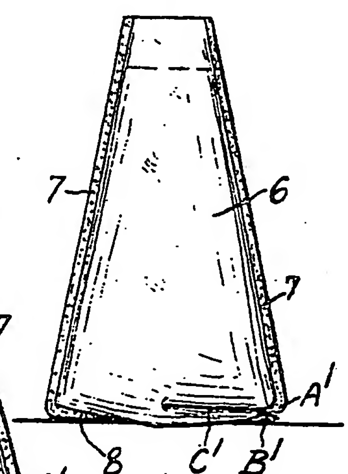
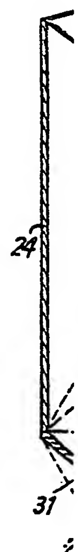


Fig.6





870,180 COMPLETE SPECIFICATION
8 SHEETS
This drawing is a reproduction of the Original on a reduced scale.
SHEETS 1 & 2

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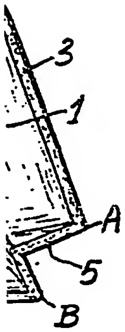


Fig. 7

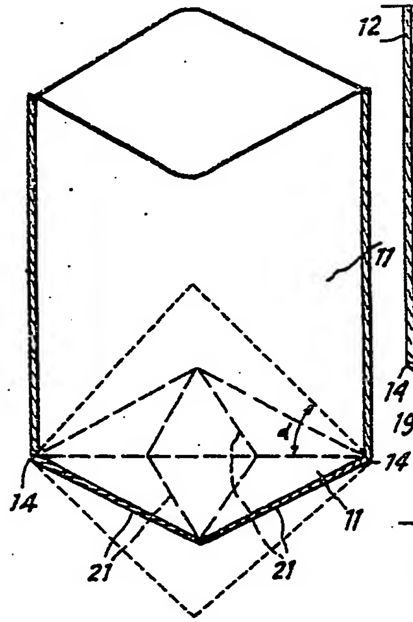
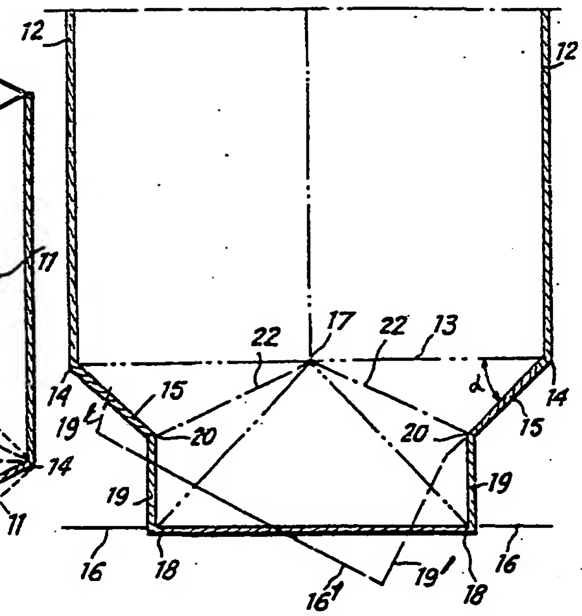


Fig. 8



5

Fig. 9

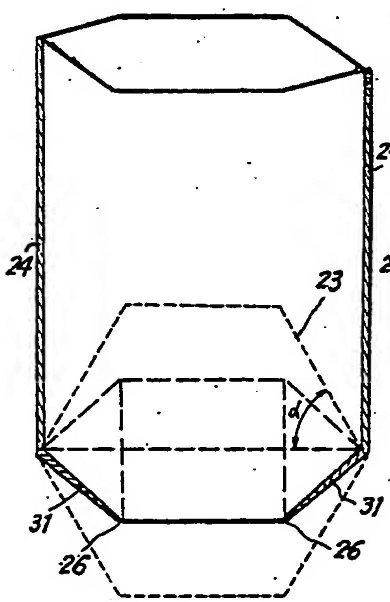
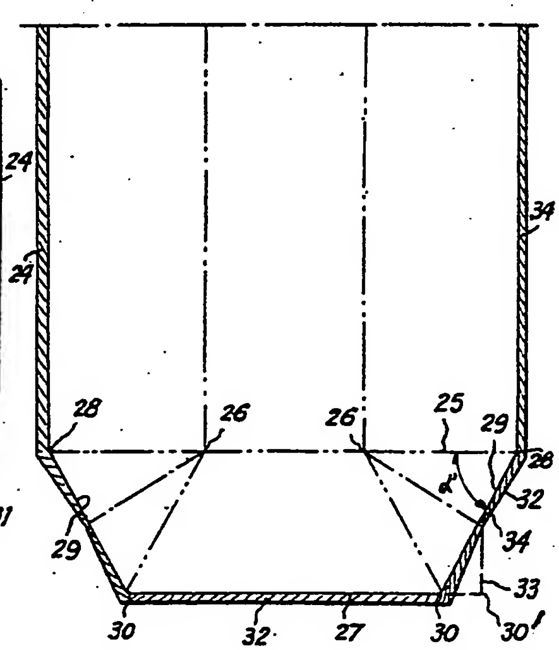


Fig. 10



870,180 COMPLETE SPECIFICATION
8 SHEETS
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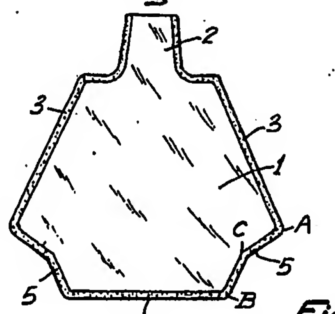
SHEETS 1 & 2

Fig.1



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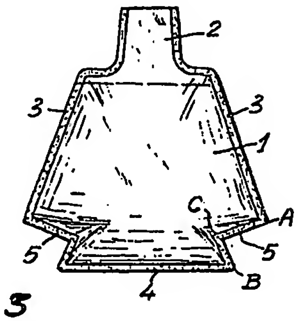


Fig.3

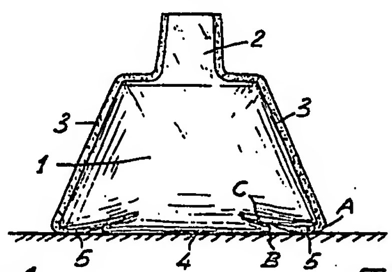


Fig.4

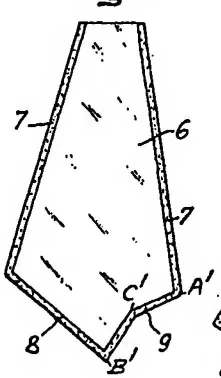


Fig.5

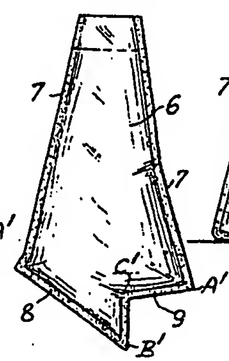
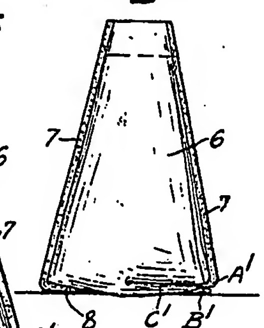


Fig.6



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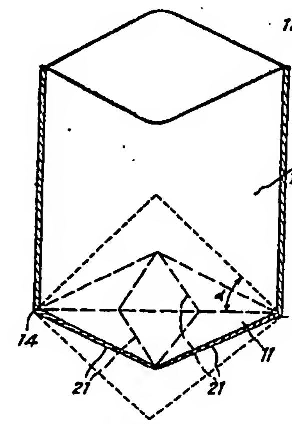


Fig.8

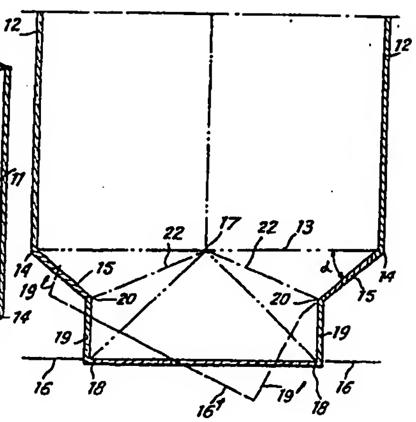


Fig.9

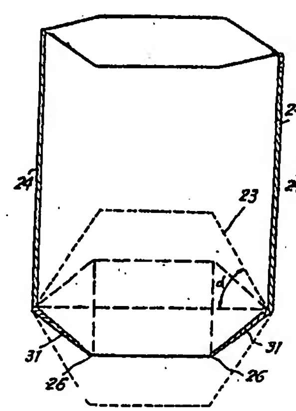


Fig.10

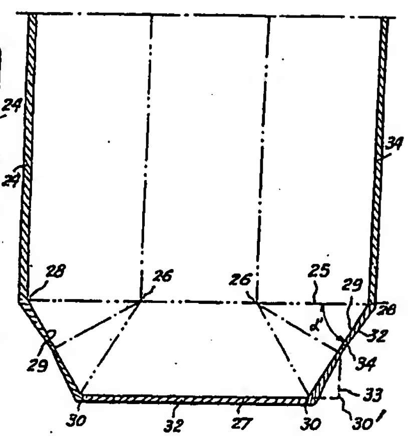


Fig. 11

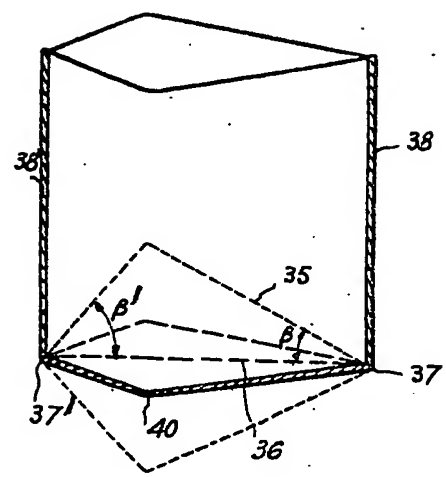


Fig. 13

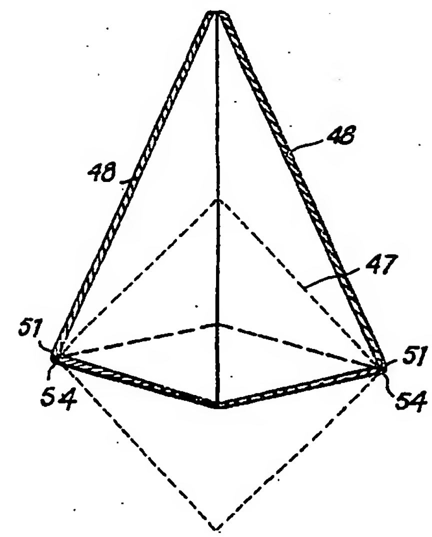


Fig. 12

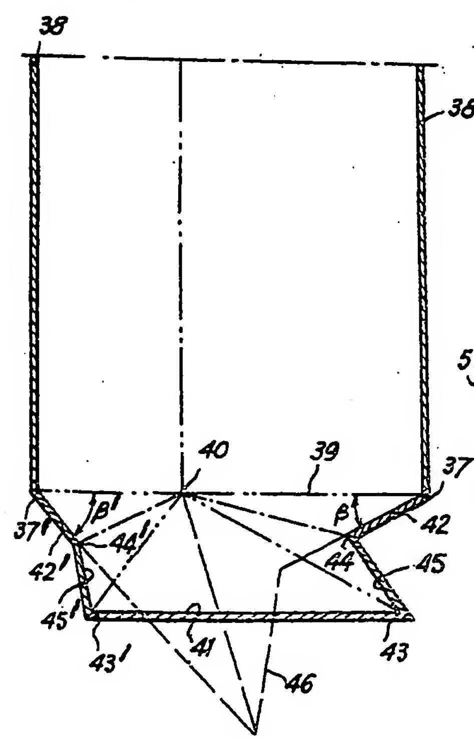
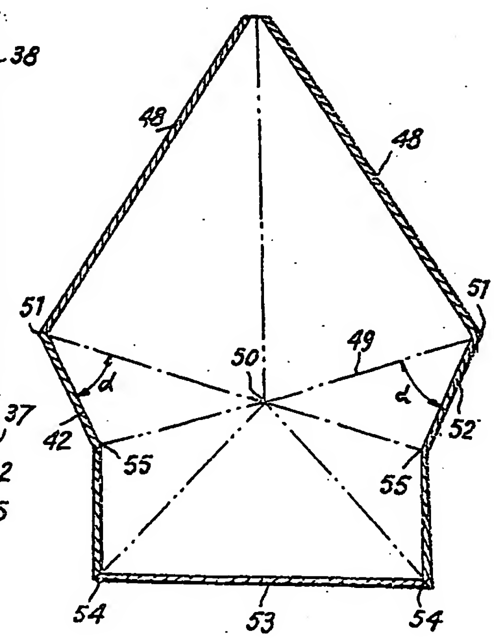


Fig. 14



870,180 COMPLETE SPECIFICATION
8 SHEETS

This drawing is a reproduction of the Original on a reduced scale.
SHEETS 3 & 4

3

Fig.15

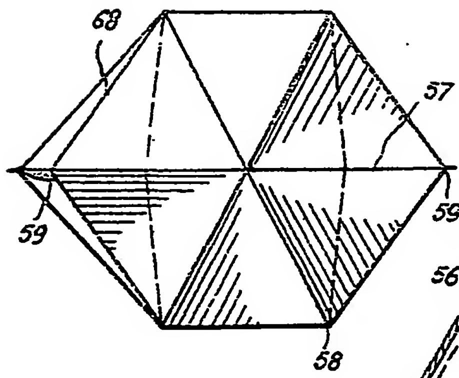


Fig.17

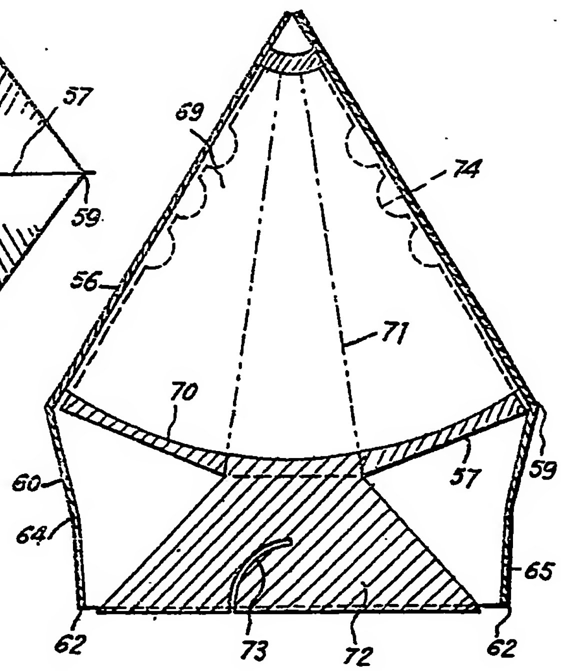


Fig.16

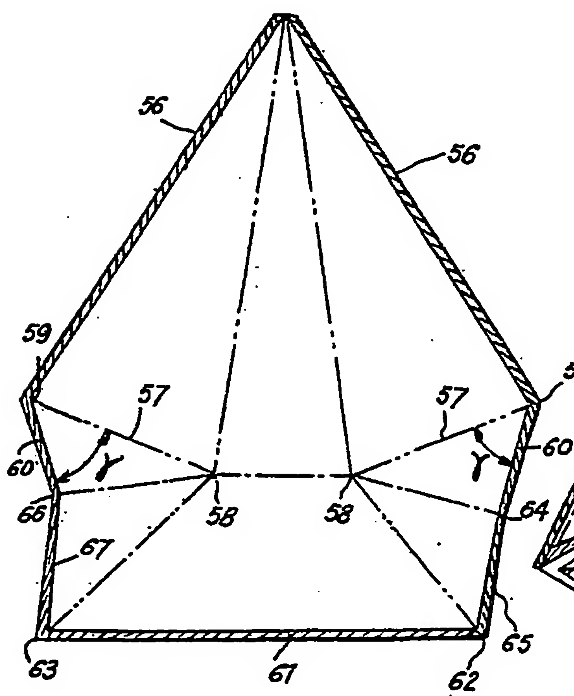
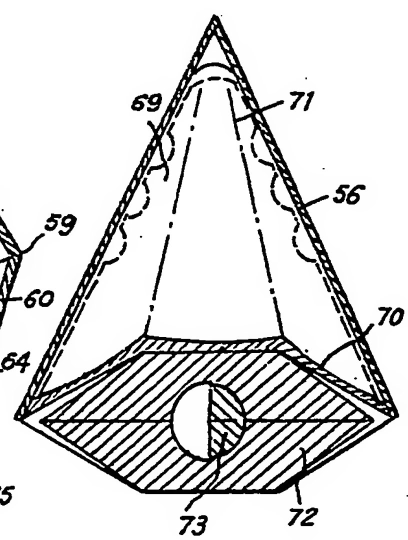


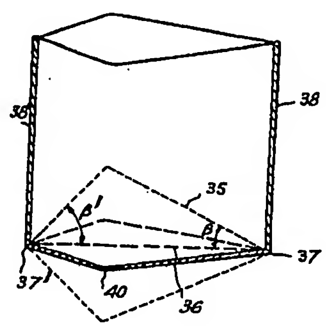
Fig.18



870,180 COMPLETE SPECIFICATION
8 SHEETS

This drawing is a reproduction of the Original on a reduced scale.
SHEETS 3 & 4

Fig.11



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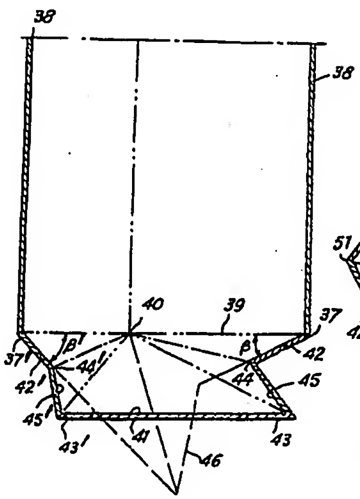
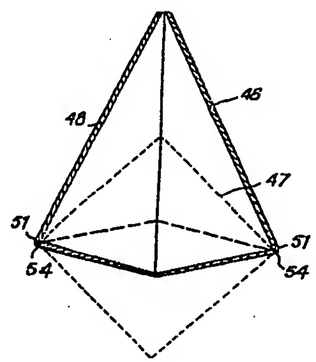


Fig.13



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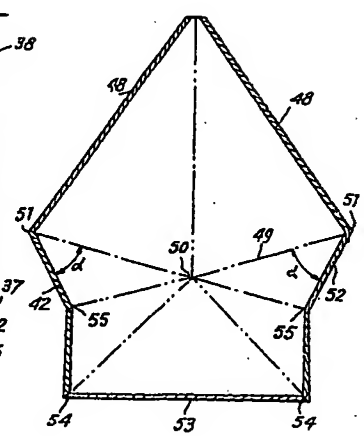


Fig.15

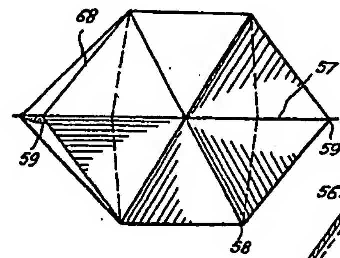
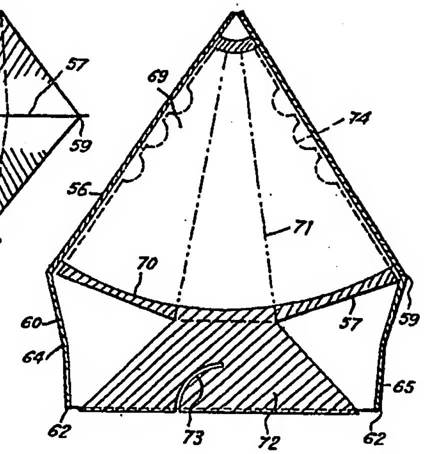


Fig.17



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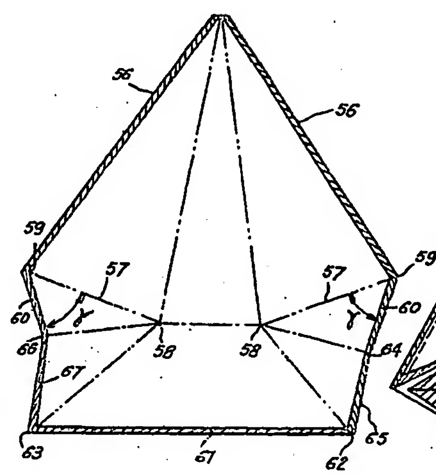

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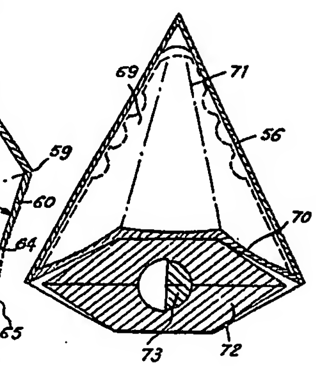

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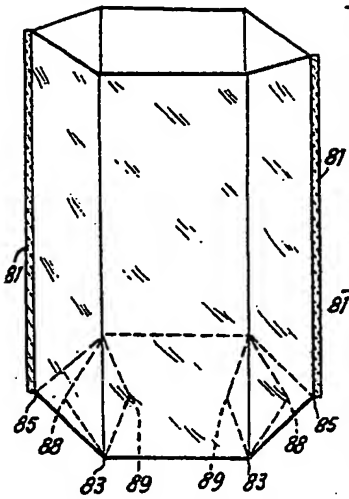

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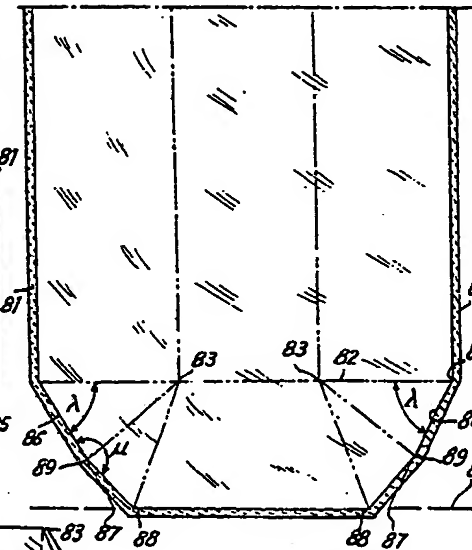

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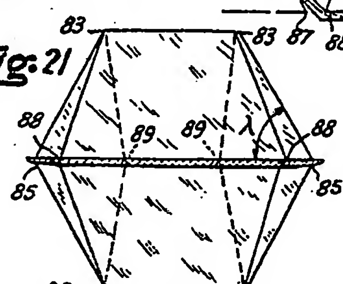
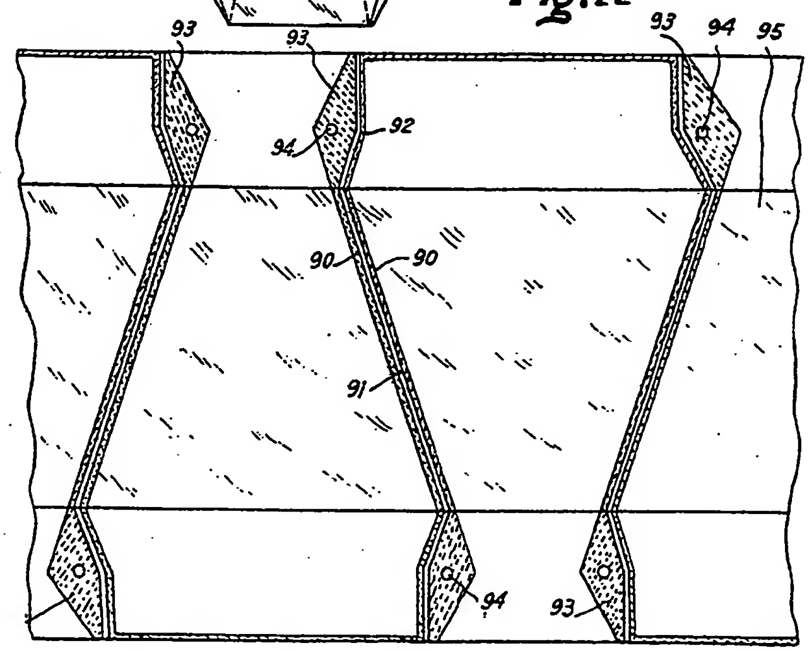


Fig. 22



870,180 COMPLETE SPECIFICATION
8 SHEETS
This drawing is a reproduction of the Original on a reduced scale.
SHEETS 5 & 6

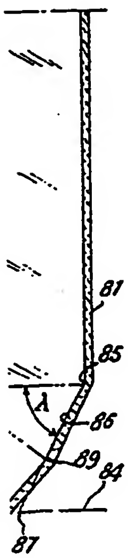


Fig. 23

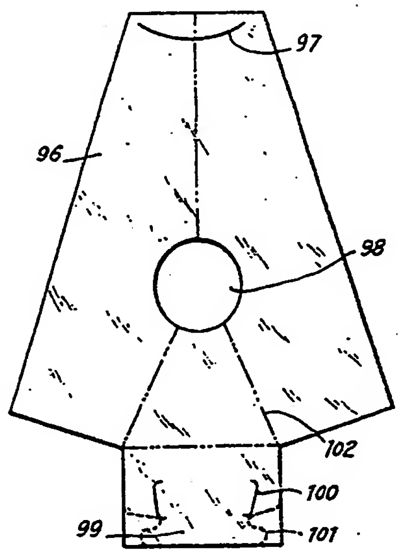


Fig. 24

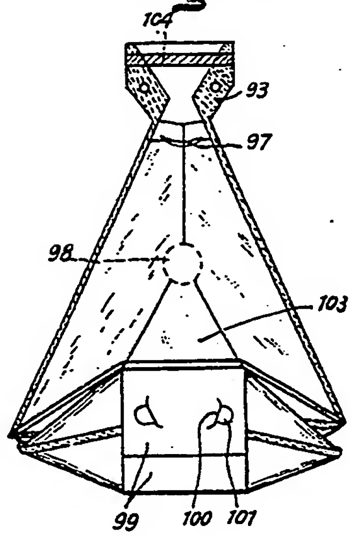


Fig. 25

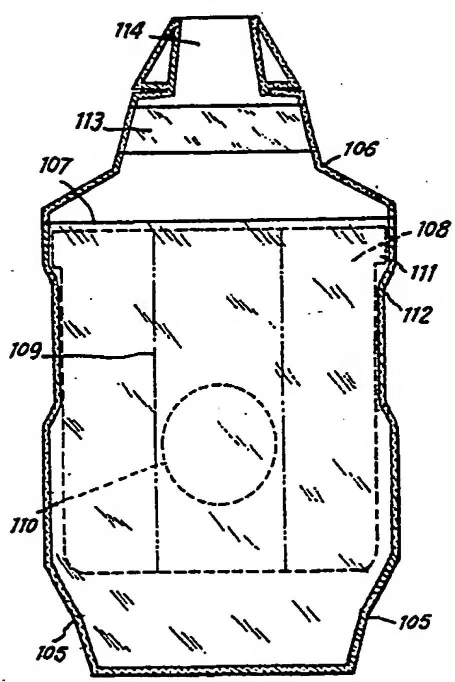
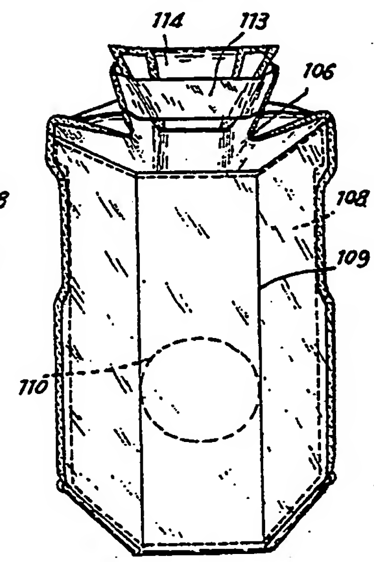


Fig. 26



870,180 COMPLETE SPECIFICATION
8 SHEETS
This drawing is a reproduction of the Original on a reduced scale.
SHEETS 5 & 6

Fig. 19

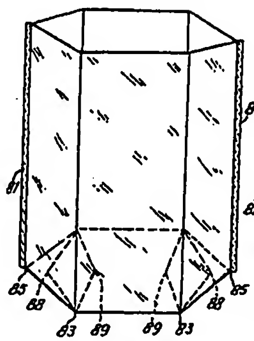


Fig. 20

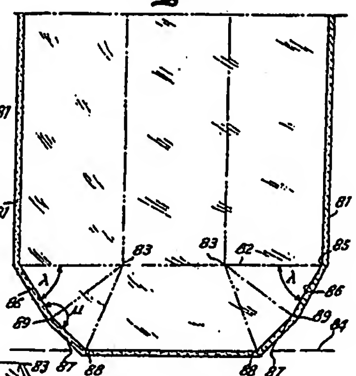


Fig. 21

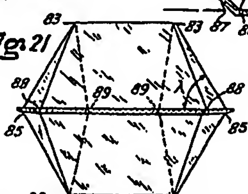


Fig. 22

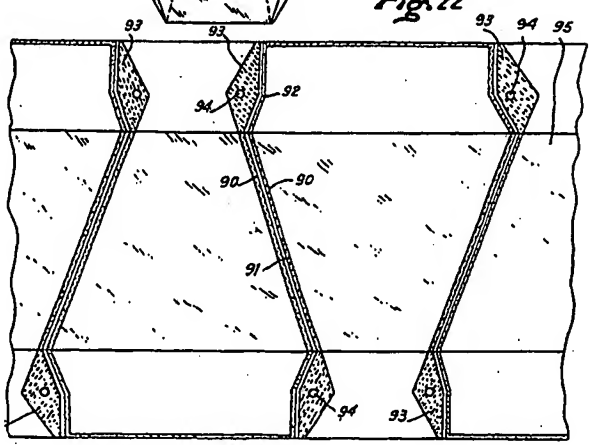


Fig. 23

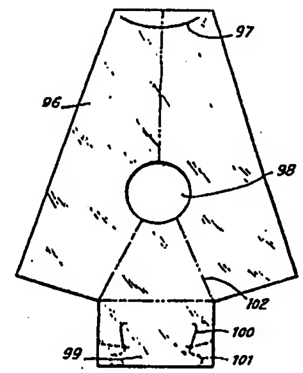


Fig. 24

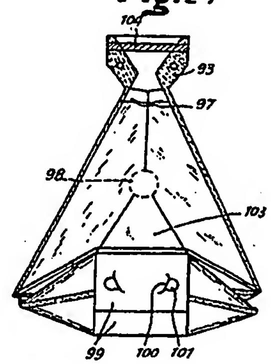
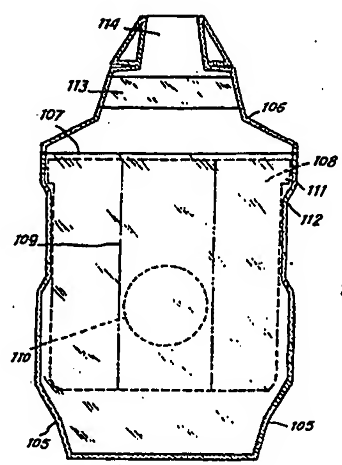


Fig. 25



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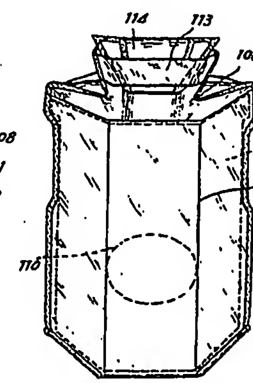

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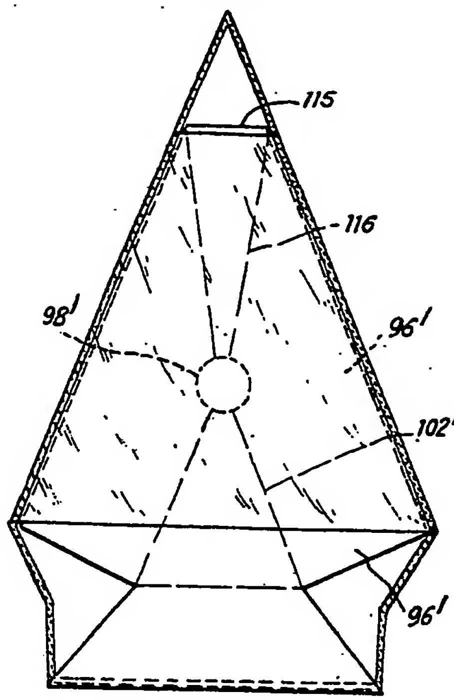

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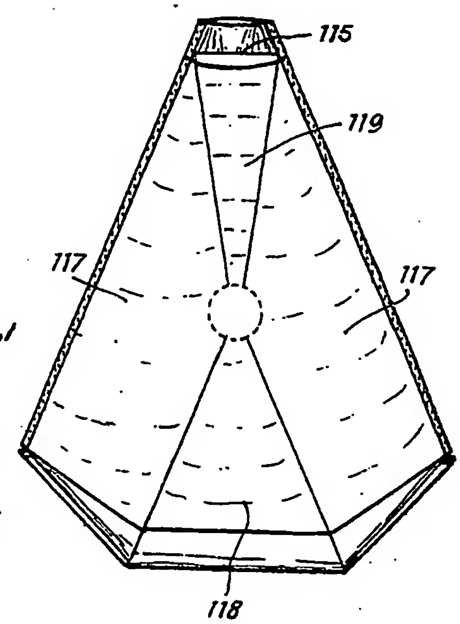


Fig. 29

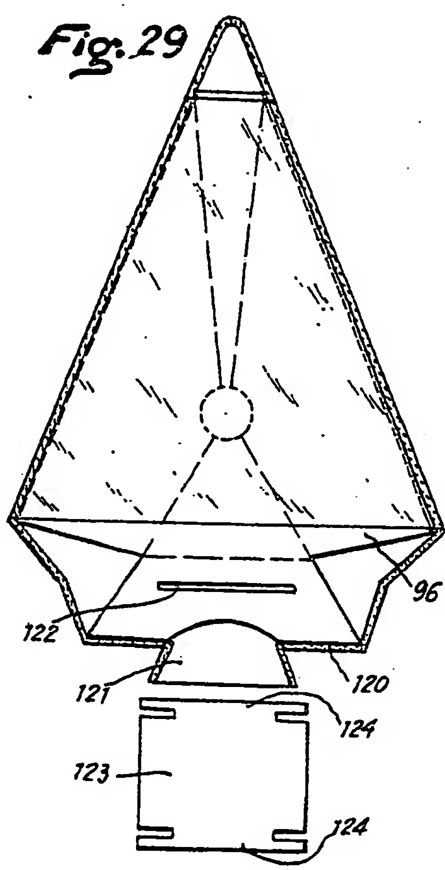
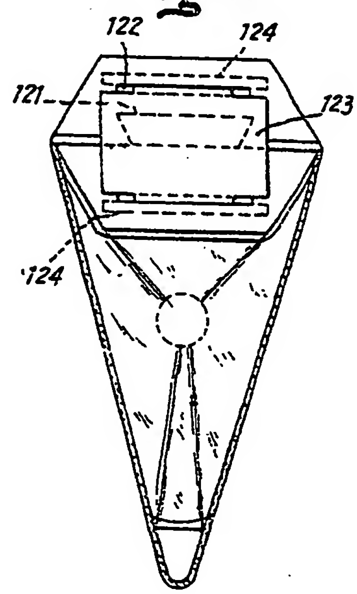


Fig. 30



870,180 COMPLETE SPECIFICATION
8 SHEETS

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SHEETS 7 & 8

g:28

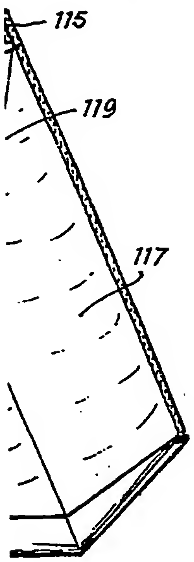
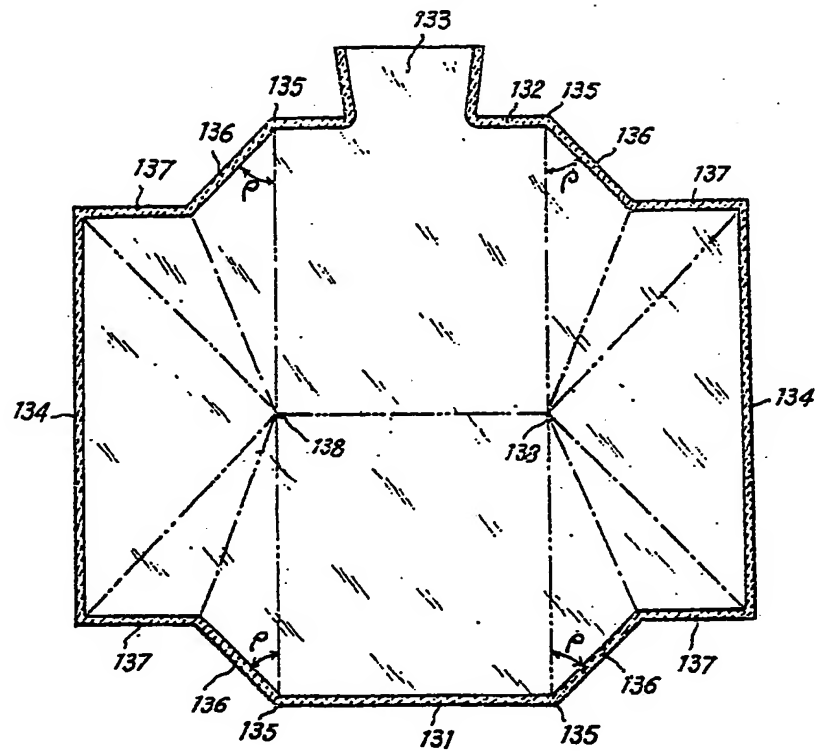


Fig: 31



g: 30

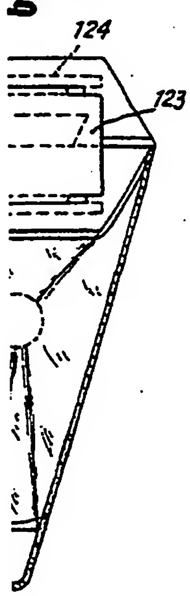
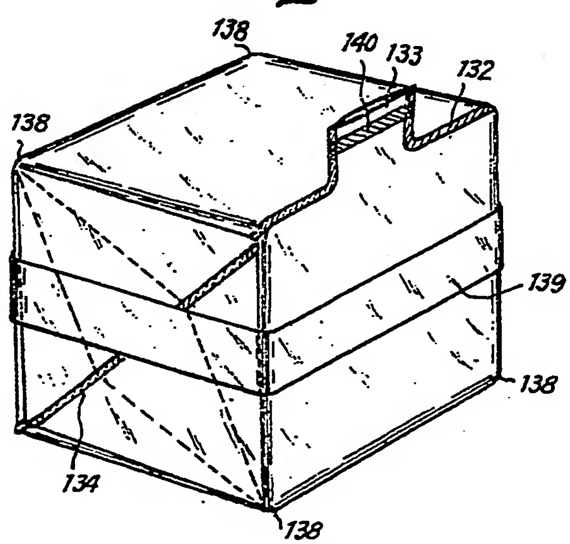


Fig: 32



870,180 COMPLETE SPECIFICATION
8 SHEETS This drawing is a reproduction of the Original on a reduced scale.
SHEETS 7 & 8

Fig. 27

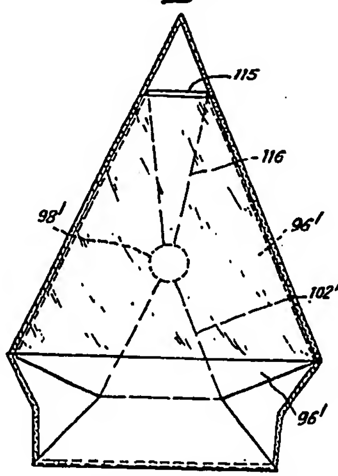


Fig. 28

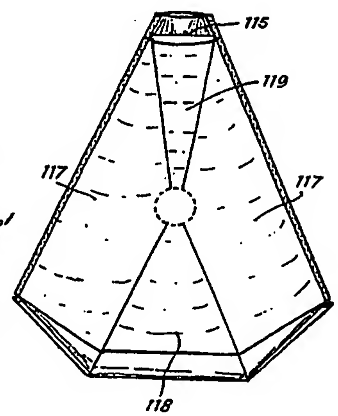


Fig. 29

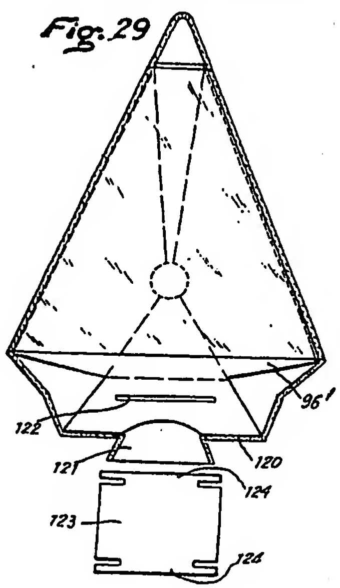


Fig. 30

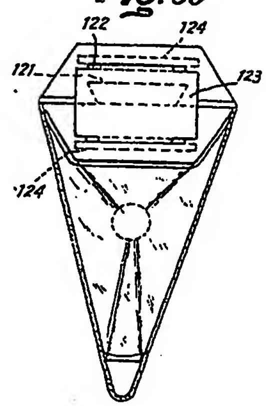


Fig. 31

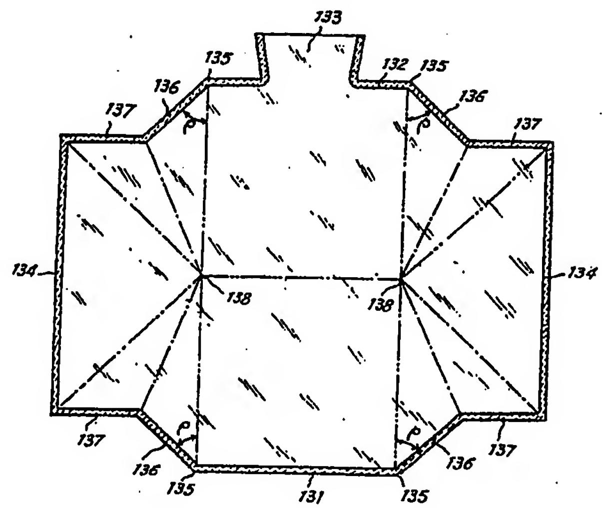


Fig. 32